

## NWA 4480

### Olivine Basalt

13 grams

#### **Introduction**

NWA 4480 is a fresh ellipsoidal stone with nearly complete dark brown fusion crust. It was purchased by G. Hupe in Tagounite, Morocco in 2006, but is thought to be from Algeria.

#### **Petrography**

The texture of NWA 4480 is different from the other shergottites. Irving et al. (2007) describe the matrix of NWA 4480 as a fine-grained basalt with grain size about 0.15 mm, which includes “glomerocrysts” with larger grain size (0.5-0.8 mm). The matrix consists of plagioclase laths, olivine, complexly-zoned pyroxene (augite cores, pigeonite rims), Ti-chromite, ilmenite, merrillite and silica. Glomerocrysts are made of coarse plagioclase and olivine, with interstitial pyroxene and ilmenite. There is an abundance of olivine and it is relatively Fe-rich ( $\text{Fo}_{68-79}$ ).

#### **Chemistry**

Irving et al. (2007) reported the chemical composition (table). The light REE are depleted (figure).

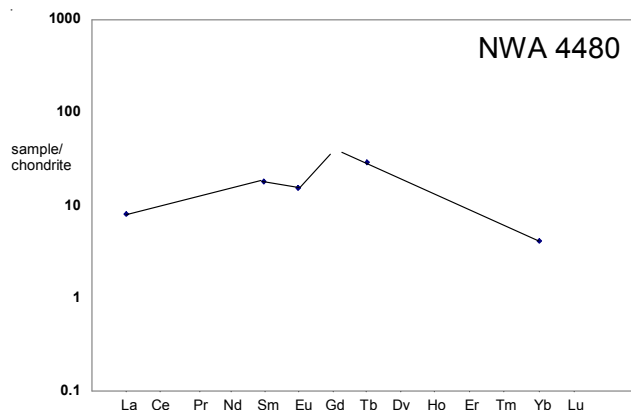


Figure 1: REE pattern for NWA 4480.

**Table 1. Chemical composition of NWA 4480.**

Irving 2007

*reference**weight*SiO<sub>2</sub> %TiO<sub>2</sub>Al<sub>2</sub>O<sub>3</sub>

FeO 20.33 (a)

MnO

MgO

CaO

Na<sub>2</sub>O 1.48 (a)K<sub>2</sub>OP<sub>2</sub>O<sub>5</sub>

S %

*sum*

Sc ppm 39.7 (a)

V

Cr 1027 (a)

Co

Ni &lt;60 (a)

Cu

Zn

Ga

Ge ppb

As

Se

Rb

Sr

Y

Zr

Nb

Mo

Ru

Rh

Pd ppb

Ag ppb

Cd ppb

In ppb

Sn ppb

Sb ppb

Te ppb

Cs ppm

Ba

La 1.85 (a)

Ce

Pr

Nd

Sm 2.69 (a)

Eu 0.86 (a)

Gd

Tb 1.05 (a)

Dy

Ho

Er

Tm

Yb 4.16 (a)

Lu

Hf 3.16 (a)

Ta

W ppb

Re ppb

Os ppb

Ir ppb

Pt ppb

Au ppb

Th ppm 0.24 (a)

U ppm

*technique: (a) INAA*